

REMARKS

Claims 10, 11, 43-45 and 47-58 are pending in this Application, with claims 10, 11, 43, 56, 57 and 58 being independent claims. Claims 10, 11 and 54-57 have been amended.

The claims stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims of U.S. Patent Nos. 6,650,452; 6,738,542 and 6,321,015 and U.S. Patent Application No. 10/713,037. The claims stand rejected under 35 U.S.C. § 112, second paragraph. The claims also stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Nakazawa et al. (Electronic Letters, Vol. 31, No. 3, pp. 216-217) (hereafter "*Nakazawa*") in view of U.S. Patent No. 5,629,795 (hereafter "*Suzuki*"). These rejections are traversed for the reasons below.

The Claims are Patentable over the references cited in the Double-Patenting Rejection

Claims 10, 11, 43-45 and 47-58 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims of U.S. Patent Application No. 10/713,037.

Because the double-patenting rejection relating to U.S. Patent Application No. 10/713,037 is provisional, Applicant will address this double-patenting rejection when this rejection ceases to be provisional.

Applicant notes that page 6 of the outstanding Office Action includes a reference to U.S. Patent No. 6,321,015 with respect to claim 57. To the extent that this is a vestige from the prior Office Action, Applicant requests correction. To the extent that this rejection was intended, Applicant notes that the prior response dated November 22, 2005 included a terminal disclaimer with respect to U.S. Patent No. 6,321,015. Thus, Applicant respectfully submits that the outstanding double-patenting rejection regarding claim 57 has already been addressed and should be withdrawn.

Accordingly, Applicant respectfully requests that the Examiner withdraw the outstanding rejection of claims 10, 11, 43-45 and 47-58 under the judicially created doctrine of obviousness-type double patenting.

The Claims Distinctly Claim the Subject Matter

Claims 10, 11 and 54-57 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to point out particularly and claim distinctly the subject matter for which Applicant regards as the invention. In particular, claims 10, 11 and 54-57 stand rejected for the use of the term “soliton like pulse.”

These claims has been amended to replace the term “soliton-like pulse” with “a soliton or substantially soliton pulse.” Applicant believes that this amendment does not add new matter and does not necessitate a new search. Applicant respectfully requests that this rejection be withdrawn.

The Claims are Patentable Over *Nakazawa* in view of *Suzuki*

Claims 10, 11, 43-45 and 47-58 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Nakazawa* in view of *Suzuki*. This rejection is traversed for the reasons below.

Independent claim 10, for example, recites an optical communication system for transmitting a soliton or soliton-like pulse. The communication system comprises a plurality of dispersion elements including at least a fiber length and discrete dispersion compensator where the fiber length and discrete compensator having different dispersions. The path average dispersion of the plurality of dispersion elements is anomalous. See also independent claims 11, 43, 56, 57 and 58.

Nakazawa is directed to an optical soliton communication system having short length fibers with varying dispersion: “[a] stable soliton exists when a product of the fiber dispersion and its length is much smaller than $D_{ave}Z_{v(ave)}$ ” [D_{ave} being defined as the average dispersion over a soliton period; $Z_{v(ave)}$ being defined as the normalized distance of the soliton period] (fifth paragraph, p. 216). Figure 2, for example, shows a transmission line having a 60 km section with -1.75 ps/km/nm group velocity dispersion, and a 30 km section with +2 ps/km/nm group velocity dispersion. As noted by the Examiner, however, *Nakazawa* fails to disclose discrete dispersion compensators.

Suzuki is directed to an optical soliton transmission system where a large negative dispersion is to be avoided “because it is a great deviation from the soliton condition” (see col. 5,

lines 37-39). The Suzuki system discloses a 9000 km fiber having an average wavelength dispersion value of 0.2 ps/km/nm, and a 30 km dispersion media having a wavelength dispersion value of -60 ps/km/nm. As shown in Figure 5, the accumulated wavelength dispersion varies between 0 and 36 ps/nm -- the average dispersion appears to be approximately 18 ps/nm.

Suzuki, however, is not properly combinable with *Nakazawa*. In particular, *Nakazawa* specifies that for a stable soliton to exist, the fiber dispersion and its length has to be much smaller than the average dispersion over the soliton period times the normalized distance of the soliton period. *Suzuki*, however, violates this condition: an average wavelength dispersion value of 0.2 ps/km/nm times a 9000 km fiber distance (i.e., resulting in a product of 1,800 ps/nm) is not smaller than the average dispersion (i.e., approximately 18 ps/nm as shown in Figure 5). Thus, someone looking to modify the *Nakazawa* system, which specifies a particular relationship regarding the fiber length and dispersion, would not look to a system, such as the *Suzuki* system, which violates this relationship. Thus, the *Suzuki* system is not properly combined with *Nakazawa*.

In addition, the combination of the *Nakazawa* system with the *Suzuki* system would be presumably inoperative. For a stable soliton to exist, *Nakazawa* states that a certain condition must be satisfied. The *Suzuki* system, however, violates this condition. Thus, the combination of the *Nakazawa* system with the *Suzuki* system presumably would fail to produce a stable soliton and be inoperative.

Thus, independent claims 10, 11, 43, 56, 57 and 58 are allowable over *Nakazawa* in view of *Suzuki*. Similarly, their respective dependent claims are allowable for at least this reason. Applicant respectfully requests that the Examiner withdraw the outstanding rejection of claims 10, 11, 43-45 and 47-58 under 35 U.S.C. § 103(a) as being unpatentable over *Nakazawa* in view of *Suzuki*.

CONCLUSION

All of the stated grounds of rejection have been properly traversed or rendered moot. The Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections, and that they be withdrawn. The Applicant believes that a full and complete response has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.


Prompt and favorable consideration of this Amendment is respectfully requested.

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